

Mr. Anthony D. Barfield Art Unit 3636; 09/554,464

Claims 1-2, 5-15, 17-21 and 23-52 remain unchanged

Claims 3, 4, 16 and 22 are amended.

3. (amended) A restraint system equipped with an insertable shoulder holder to increase survival  
5 chance in a real-world accident of a vehicle, train or an aeroplane or in an inflight turbulence,  
comprising
- a three- or multi-point seat belt (1, 1b, 1e), [[consisting of several]] comprising lap-, shoulder- and  
extending belt portions, at least one latch plate, a lap buckle assembly (9.1), a belt pretensioner  
and belt fittings;
- 10 the insertable shoulder holder (10, 10b, 10f), having a pair of shoulder caps (10.2, 10.2b, 10.2f)  
with first open apertures[[ to receive the belt portions]];
- in one of which the shoulder belt portion of the three-point seat belt is received; or
  - in which both shoulder belt portions of the multi-point seat belt are received;
- at least one pair of supplemental buckle assemblies (18a / 19a to 18n / 19n), attached in a seat  
15 backrest (3.2a, 3.2c); and
- a pair of shoulder latch plates (10.1b), connected to the shoulder caps (10.2, 10.2b, 10.2f) and  
having plug-in holes for ensuring a plug-in connection with the supplemental buckle assemblies  
and second open apertures;
- in one of which the shoulder belt portion of the three-point seat belt is loosely secured by  
20 a quick-release pin (10.10), when the insertable shoulder holder and the three-point seat  
belt are fitted together, and released by withdrawal thereof for removal, when the  
insertable shoulder holder is withdrawn; or
  - in which the shoulder belt portions of the multi-point seat belt are loosely secured by  
quick-release pins (10.10), when the insertable shoulder holder and the multi-point seat  
25 belt are fitted together, and released by withdrawal thereof for removal, when the  
insertable shoulder holder is withdrawn;
- [[second open apertures, in which the belt portions are loosely secured by quick-release pins  
(10.10), when the insertable shoulder holder and the seat belt are fitted together, and released  
by withdrawal thereof for removal, when the insertable shoulder holder is withdrawn; and
- 30 at least one pair of supplemental buckle assemblies (18a / 19a to 18n / 19n), attached in a seat  
backrest (3.2a, 3.2c);]]
- wherein

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a passenger is restrained by the three- or multi-point seat belt (1, 1b, 1e) and his shoulders are restrained by the shoulder caps (10.2, 10.2b, 10.2f) upon the plug-in connection of the shoulder latch plates (10.1b) with the supplemental buckle assemblies (18a / 19a to 18n / 19n); and

5     [[at least one shoulder belt portion of the seat belt (1, 1b, 1e) is extended over the corresponding, first open aperture and loosely secured in the corresponding, second open aperture by the quick-release pin.]]

the shoulder belt portion of the three-point seat belt is extended over the corresponding, first open aperture and loosely secured in the corresponding, second open aperture by the quick-release pin; or

10     the shoulder belt portions of the multi-point seat belt are extended over both first open apertures and loosely secured in both second open apertures by the quick-release pins.

4. (amended) A restraint system equipped with an insertable, one-piece shoulder- and neck holder to increase survival chance in a real-world accident of a vehicle, train or an aeroplane or in an inflight turbulence, comprising

15     a three- or multi-point seat belt (1a, 1c, 1e), [[consisting of several]] comprising lap-, shoulder- and extending belt portions, at least one latch plate, a lap buckle assembly (9.1), a belt pretensioner and belt fittings;

the insertable, one-piece shoulder- and neck holder (10a, 10c), defined by a neck cap (10.4a, 10.4c) and a shoulder cap (10.2a, 10.2c) with first open apertures[[ to receive the belt portions]];

- 20
  - in one of which the shoulder belt portion of the three-point seat belt is received; or
  - in which both shoulder belt portions of the multi-point seat belt are received;

at least one pair of supplemental buckle assemblies (18a / 19a to 18n / 19n), attached in a seat backrest (3.2a, 3.2c); and

25     a pair of shoulder latch plates (10.1b), connected to the shoulder cap (10.2a, 10.2c) and having plug-in holes for ensuring a plug-in connection with the supplemental buckle assemblies and second open apertures;

- 30
  - in one of which the shoulder belt portion of the three-point seat belt is loosely secured by a quick-release pin (10.10), when the insertable, one-piece shoulder- and neck holder and the three-point seat belt are fitted together, and released by withdrawal thereof for removal, when the insertable, one-piece shoulder- and neck holder is withdrawn; or

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- in which the shoulder belt portions of the multi-point seat belt are loosely secured by quick-release pins (10.10), when the insertable, one-piece shoulder- and neck holder and the multi-point seat belt are fitted together, and released by withdrawal thereof for removal, when the insertable, one-piece shoulder- and neck holder is withdrawn;

5 [[second open apertures, in which the belt portions are loosely secured by quick-release pins (10.10), when the insertable, one-piece shoulder- and neck holder and the seat belt are fitted together, and released by withdrawal thereof for removal, when the insertable, one-piece shoulder- and neck holder is withdrawn; and

10 at least one pair of supplemental buckle assemblies (18a / 19a to 18n / 19n), attached in a seat backrest (3.2a, 3.2c);]]

wherein

15 a passenger is restrained by the three- or multi-point seat belt (1a, 1c, 1e) and his shoulders and his neck are restrained by the shoulder cap (10.2a, 10.2c) and neck cap (10.4a, 10.4c) upon the plug-in connection of the shoulder latch plates (10.1b) with the supplemental buckle assemblies (18a / 19a to 18n / 19n); and

[[at least one shoulder belt portion of the seat belt (1, 1b, 1e) is extended over the corresponding, first open aperture and loosely secured in the corresponding, second open aperture by the quick-release pin.]]

20 the shoulder belt portion of the three-point seat belt is extended over the corresponding, first open aperture and loosely secured in the corresponding, second open aperture by the quick-release pin; or

the shoulder belt portions of the multi-point seat belt are extended over both first open apertures and loosely secured in both second open apertures by the quick-release pins.

25 16. (amended) The restraint system according to claim 15, wherein the cap energy absorber is [[fastened]] releasably attached to the shoulder- or neck cap by an adhesive fastener and detachable therefrom by opening the fastener.

22. (amended) The restraint system according to claim 3, wherein the shoulder latch plate of the insertable shoulder holder is provided with a latch energy absorber (10.9).

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What is claimed:

1. A restraint system equipped with a rotatable shoulder holder to increase survival chance in a real-world accident of a vehicle, train or an aeroplane or in an inflight turbulence, comprising a seat belt (1d, 1e), consisting of several belt portions, at least one latch plate, a lap buckle assembly (9.1), a belt pretensioner and belt fittings;
- 5 the rotatable shoulder holder (10d), having a pair of shoulder caps (10.2d), which, when in a resting position, are located in a seat backrest (3.2d, 3.2e); and
- a rotatable device (28), having a pair of rotatable levers (28.5), retained by stop pieces (28.9) in the resting position, where the rotatable levers (28.5), having first ends, connected to the pair of
- 10 shoulder caps (10.2d), and second ends, connected to each other by a shaft (28.7), are rotatably attached to a pair of casings (29), each of which, defined by an L-shaped plate (28.4) and two outer tubes (28.1, 28.2), connected to each other by a coupling wall (28.3), is height-adjustable, latchable and guided by inner tubes (71, 72) of a seat backrest frame (3.4d, 3.4e);
- wherein
- 15 a passenger is restrained by the seat belt (1d, 1e) and his shoulders are restrained by the shoulder caps (10.2d), moved by the rotatable device, when operated from the resting position to an operative position;
- where at least one shoulder belt portion of the seat belt (1d, 1e) is extended over the respective shoulder cap and a U-shaped plate (10.15) thereof, when the rotatable levers (28.5) are
- 20 rotated, causing release cams (28.6) of the rotatable levers to force a rotation of lock pawls (28.8), pre-loaded by first springs (28.10), thereby permitting locking pins (28.12), pre-loaded by second springs (28.13) and loosely guided in guide tubes (28.11), to move into holes (28.14) of the casings (29) and block the rotatable levers in both directions.
2. A restraint system equipped with a rotatable shoulder holder to increase survival chance in a
- 25 real-world accident of a vehicle, train or an aeroplane or in an inflight turbulence, comprising a seat belt (1, 1e), consisting of several belt portions, at least one latch plate, a lap buckle assembly (9.1), a belt pretensioner and belt fittings;
- the rotatable shoulder holder (10e), having a pair of shoulder caps (10.2e), which, when in a resting position, are located on an upper portion of a seat backrest (3.2d, 3.2e); and
- 30 a motor-driven rotatable device (28a), having a drive apparatus (80) and a pair of rotatable levers (28.5a), having first ends, connected to the pair of shoulder caps (10.2e), and second ends, connected to each other by a shaft (28.7), are rotatably attached to a pair of casings (29a),

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each of which, defined by an L-shaped, partly laterally closed and partly laterally open plate (28.4a) and two outer tubes (41e, 41f), connected to each other by a coupling wall (28.3), is height adjustable, latchable and guided by inner tubes (71, 72) of a seat backrest frame (3.4d, 3.4e); and

- 5 vibration-dampening energy absorbers (40e, 40f), having a number of clamping members (42e, 42f) provided with sites of predetermined fracture (s), biased, arranged along the outer tubes (41e, 41f) and tautly, less tautly or loosely connected to the pair of rotatable levers via stop pieces (28.9a) by corresponding wires (47e, 47f);

wherein

- 10 a passenger is restrained by the seat belt (1, 1e) and his shoulders are restrained by the shoulder caps (10.2e), moved by the rotatable device, driven by the drive apparatus (80), from the resting position to an operative position;

- where at least one shoulder belt portion of the seat belt (1, 1e) is extended over the respective shoulder cap and a U-shaped plate (10.15) thereof, when the rotatable levers (28.5a) are  
15 rotated by the drive apparatus (80), causing release cams (28.6a) of the rotatable levers to force a rotation of lock pawls (28.8a), pre-loaded by first springs (28.10a), thereby permitting locking pins (28.12), pre-loaded by second springs (28.13) and loosely guided in guide tubes (28.11), to move into holes (28.14) of the casings (29a) and block the rotatable levers in one direction;

- 20 where in the real-world accident or in the Inflight turbulence a forward motion of the torso and head rotates the rotatable levers in another direction through the openings of the L-shaped, partly laterally closed and partly laterally plates (28.4a), thus moving the clamping members (42e, 42f) along the corresponding tubes (41e, 41f) resulting in a work of deformation and friction, during which vibrations are dampened and a stored energy is released by fracture of  
25 the sites of predetermined fracture of the clamping members in excess of respective threshold values.

3. A restraint system equipped with an insertable shoulder holder to increase survival chance in a real-world accident of a vehicle, train or an aeroplane or in an inflight turbulence, comprising

- 30 a three- or multi-point seat belt (1a, 1c, 1e), comprising lap-, shoulder- and extending belt portions, at least one latch plate, a lap buckle assembly (9.1), a belt pretensioner and belt fittings;